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14. ABSTRACT The Euphrates, Nile, and Jordan Rivers are at center stage in the continued existence of the peoples in their basins where water scarcity serves as a source of conflict between the region's riparian nations, within national borders, and as an underlying condition that contributes to the unrest that breeds and incubates the development of violent behavior. Decreases in water quality, population growth, and/or unequal water access cause an increase in water scarcity. That scarcity results in adverse economic effects and is a source of human migration. Ethnic conflicts, power struggles and potentially trans-border conflicts may be the final outcome. The water scarcity conflicts in the Middle East and North Africa are of concern to the EUCOM and CENTCOM commanders because this is a source of instability in the region. There is a place for the EUCOM and CENTCOM Commanders to include water issues in their theater and operational activities: both in shaping the areas and when required, in conducting operations. With each of these major rivers crossing from one Area of Responsibility to another, the EUCOM and CENTCOM commanders must ensure their actions concerning water in the region are synchronized and coordinated with each other and a common picture of the endstate is both shared and worked toward.					
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Water Scarcity as a Cause of Conflict in the Nile, Euphrates, and Jordan River Basins

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract

The Euphrates, Nile, and Jordan Rivers are at center stage in the continued existence of the peoples in their basins where water scarcity serves as a source of conflict between the region's riparian nations, within national borders, and as an underlying condition that contributes to the unrest that breeds and incubates the development of violent behavior. Decreases in water quality, population growth, and/or unequal water access cause an increase in water scarcity. That scarcity results in adverse economic effects and is a source of human migration. Ethnic conflicts, power struggles and potentially trans-border conflicts may be the final outcome. The water scarcity conflicts in the Middle East and North Africa are of concern to the EUCOM and CENTCOM commanders because this is a source of instability in the region. There is a place for the EUCOM and CENTCOM Commanders to include water issues in their theater and operational activities: both in shaping the areas and when required, in conducting operations. With each of these major rivers crossing from one Area of Responsibility to another, the EUCOM and CENTCOM commanders must ensure their actions concerning water in the region are synchronized and coordinated with each other and a common picture of the endstate is both shared and worked toward.

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Introduction

Water is the most basic human need. A person “can live for several weeks without food,” but would die if deprived of water for 3 days.¹ Water covers three-fourths of the Earth. Yet only about two percent of that is fresh water and the bulk of that fresh water is captured in glaciers and polar ice.² A look at where water is scarce includes the Middle East and North Africa, an area where the world’s most ancient civilizations are associated with the region’s major sources of water: the Euphrates River, the Nile River, and the Jordan River. These same rivers that served as the catalyst for the world’s ancient civilizations are today at center stage in the continued existence of the peoples in their basins where water scarcity serves as a source of conflict between the region’s riparian nations, a source of conflict within national borders, and as an underlying condition that contributes to the unrest that breeds and incubates the development of violent behavior that has come to be associated with the area. A closer examination of the riparian nations of the Euphrates, Nile, and Jordan Rivers is a roster of the nations that have gained the personal attention of the President and the efforts of the nation to achieve stability in the region. That stability is a vital interest as “the fate of the greater Middle East...will have a profound and lasting impact on American security.”³ In assessing future threats, water quality and quantity have a future role in promoting regional tensions and conflict. In fact, of the nineteen potential “direct international conflicts over water,” that the United Nations reports as reasonably likely in the

¹ Liesl Graz, “Water source of life,” in Forum: war and water (Geneva: International Committee of the Red Cross, 1999), 8.

² United Nations Environment Programme, “A World of Salt: total global saltwater and freshwater estimates,” (2002) <<http://www.unep.org/vitalwater/freshwater.htm>> [12 April 2006].

³ National Security Council, National Strategy for Victory in Iraq (Washington, DC: November, 2005), 1.

future, eight would involve riparians of these three key river basins.⁴ To control sources of instability that threaten US interests in their areas of responsibility, geographic combatant commanders must participate in resolving water conflicts.

Water scarcity in the Middle East and North Africa, actual, perceived, and potential has the ability to create many levels of conflict: whether between states, internal strife, or exported terrorism. Thomas Homer-Dixon's Consequences of Environmental Scarcity Model (Figure 1) provides a cogent argument that illustrates the linkages between environmental scarcities to the types of violence that have become a concern of the United States.

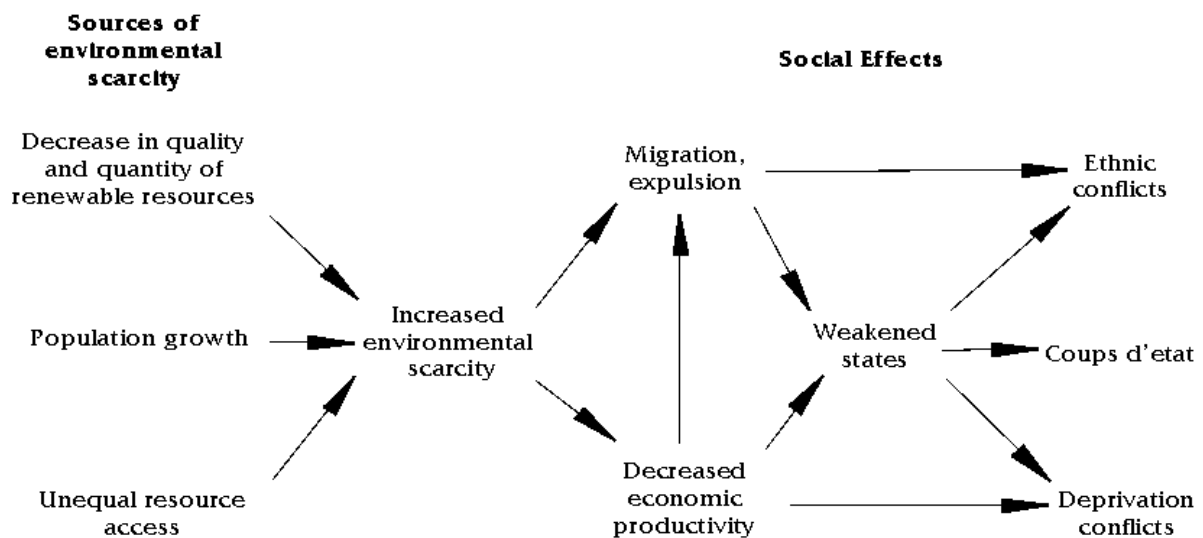


Figure 1: Consequences of Environmental Scarcity Model⁵

Though the model is applicable to resources other than water, when narrowly applied to water, the major causes of water scarcity lead to violent social effects. One or a combination

⁴ Daniel Schwartz and Ashbindu Singh, Environmental Conditions, Resources, and Conflicts: an introductory overview and data collection (Nairobi, Kenya: United Nations Environmental Program, 1999), 11.

⁵ Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict: evidence from cases." (Summer 1994) <<http://www.library.utoronto.ca/pcs/evidence/evid1.htm>> [16 April 2006].

of decreases in water quality, population growth, and/or unequal water access causes an increase in water scarcity. That scarcity results in adverse economic effects and is a source of human migration. A weakened state results and ethnic conflicts, power struggles and potentially trans-border conflicts may be the final outcome.⁶ The types of unrest that the Environmental Scarcity Model links to water scarcity are the same “underlying conditions” that serve as the base for the basic structure of terrorist organizations.⁷ Water scarcity was once simply a regional concern when its effects could be contained within the Middle East and North Africa.⁸ However, in the current war, lately termed The Long War, the global effects of Middle East violence requires that we add regional water scarcity to the list of concerns in dealing with improving Middle East and African stability.

The Nile

“The national security of Egypt is in the hands of eight other African countries in the Nile basin.” - Boutros-Boutros Ghali⁹

The Nile presents a complex river basin with both internal water conflicts and the potential of interstate wars. It is the world’s longest river, tracing a path 6,825 kilometers from its source in Tanzania’s Luvironza River¹⁰ and flowing through five African states in the EUCOM Area of Responsibility (AOR): Burundi, Rwanda, Tanzania, Uganda, Democratic Republic of the Congo; and four African states in the CENTCOM AOR: Kenya,

⁶ Homer-Dixon.

⁷ President, National Strategy for Combating Terrorism, (Washington, DC: February 2003), 6.

⁸ Tony Allan, The Middle East water question: hydro politics and the global economy (London: I.B. Tauris, 2000), 261.

⁹ Boutros Boutros-Ghali, quoted in Paul Simon, Tapped Out: the coming world crisis in water and what we can do about it (New York: Welcome Rain Publishers, 1998), 53.

¹⁰ John Waterbury, Hydro politics of the Nile Valley (Syracuse, New York: Syracuse University Press, 1979), 13-14.

Ethiopia, the Sudan, Egypt.¹¹ These countries have been marked as unpredictable state actors who exhibit the factors that lead to water scarcity, the second order effects of migration and decreased economic productivity, and the violent end results that often accompany those social effects. While water may not be the direct cause of conflict within the region; water scarcity is the consistent underlying factor in the declines of the riparian states that precede those conflicts.

Of the nine Nile riparians, five rank in the top 16 recipients of United States foreign aid, reflecting the level of importance our government places on engagement in this region.¹² Of these riparians, Egypt ranks as one of the world's most severely water stressed, with 89 percent of the country consuming in excess of "40 percent of the available water."¹³ The Nile completely defines Egyptian society as its people live along its banks, leaving the rest of the country an uninhabited desert.¹⁴ No other nation in the world is so dependent on a river for its life¹⁵ and "it is the axiomatic policy of every Egyptian regime that it will go to war, if necessary, to prevent either of its closest riparian neighbors, Sudan and Ethiopia, from reducing in any way the flow of the Nile."¹⁶ Egypt has also expressed concerns as to the unrest in the upstream Nile basin and has at times "explicitly...reserve[d] for itself the right to intervene in the affairs of other states to protect its vital water interests."¹⁷ With the

11 Joyce R. Starr and Daniel C. Stoll, U.S. foreign policy on water resources in the Middle East (Washington, DC: The Center for Strategic and International Studies, December, 1987), 10.

12 Curt Tarnoff and Larry Nowels, Foreign Aid: An Introductory Overview of U.S. Programs and Policy (Washington, DC: Library of Congress, Congressional Research Service, April 15, 2004), 13.

13 The Economist Pocket World in Figures (London: Profile Books Ltd, 2006), 105.

14 Arun P. Elhance, Hydropolitics in the 3rd World: conflict and cooperation in international river basins (Washington, DC: United States Institute of Peace Press, 1999), 60-61.

15 Waterbury, Hydropolitics of the Nile Valley, 63.

16 Thomas Naff, "Conflict and Water Use in the Middle East," in Water in the Arab World: perspectives and prognoses, ed. Peter Rogers and Peter Lydon (Cambridge, MA: Harvard University Press, 1994) 281.

17 Waterbury, Hydropolitics of the Nile Valley, 5.

world's twelfth largest standing armed force of some 450,000 men,¹⁸ Egypt possesses a large enough force to make good on Anwar Sadat's timeless warning that "we depend on the Nile 100 percent in our life, so if anyone, at any moment thinks to deprive us of our life we shall never hesitate [to go to war] because it is a matter of life or death."¹⁹ Egypt's near hegemonic involvement in upstream matters is illustrated in their influencing the Owens Falls hydroelectric project on the Victoria Nile in Southeast Uganda, where they made water agreements and "still have had an observer at the site ever since [1954] to monitor flows."²⁰ In addition to the geographic factor of being the downstream riparian, Egypt's near paranoia about Nile water access is also rooted in its colonial roots under British control. Egypt saw economic threats in British schemes to irrigate upstream in the Sudan and Ethiopia. These schemes would not only put competing crops in the marketplace, but would also reduce downstream water and Egyptian production, especially in cotton.²¹ The failed attempt by France in 1898 at Fashoda (now Kodok) in Sudan to wrest control of Nile headwaters from Britain, with the goal of controlling Egypt's water supply also impacts on the Egyptian mindset about future possible threats to its water access.²² These water access fears led Egypt to build the Aswan High Dam, creating the ability to store enough water to alleviate upstream variations in water flows, whether natural or manmade, and "guarantee Egyptian agriculture a steady and predictable water supply, year-in, year out."²³ The Aswan High Dam was a nearly direct cause of military confrontation over water. President Nassar had nationalized the Suez Canal in order to use revenues charged to foreigners to help pay for

¹⁸ The Economist Pocket World in Figures, 101.

¹⁹ Waterbury, Hydropolitics of the Nile Valley, 78.

²⁰ Allan, 258.

²¹ Waterbury, Hydropolitics of the Nile Valley, 64.

²² Ibid.

²³ Ibid, 151.

building the dam. The result was ‘a direct military assault on Egypt by Great Britain, France, and Israel.’²⁴ It is instructional to note that the final funding and technical support for the Aswan Dam construction came from the Soviet Union, after President Nassar had switched Cold War alignments in order to avoid what he justifiably expected would be political pressures that would accompany American and British funding.²⁵ This same behavior is what can be predicted of the unpredictable, “nominally independent, poorly integrated, politically unstable states [upstream of Egypt] whose policies, moods, objectives, and big power alignments cannot be satisfactorily forecast from one year to the next.”²⁶

While the Aswan Dam does provide a predictable water access for Egypt, it has contributed to the decrease in quality of water and other factors in agricultural production. First, the fertile silt that for thousands of years was deposited by the annual Nile floods no longer is available, leading to loss of farmable land.²⁷ Plus, arable soil is being lost to the increased salinity and increased chemical levels that accompany over-irrigation and fertilizing.²⁸

Though already critically short of water to support its current population of some 71 million people, Egypt’s population growth is at a pace to further seriously aggravate water scarcity. By the year 2050, Egypt’s population is predicted to have grown to 126 million, a 73 percent increase.²⁹ Likewise, the Sudan is expected to nearly double its population from today’s 34 million to 67 million by year 2050.³⁰ Keeping pace has been the growth of the Sudan’s cattle herds. The combination of more people and cattle with lowered rainfall has

²⁴ Ibid, 107.

²⁵ Ibid, 106.

²⁶ Ibid, 63.

²⁷ Ibid, 152.

²⁸ Ibid, 144.

²⁹ The Economist Pocket World in Figures, 16.

³⁰ Ibid.

brought on a decrease in the quality of soil,³¹ adding more underlying negative factors that lead to negative social effects and the resulting violence and further instability.

China receives about 5 percent of its oil from the Sudan.³² It doesn't take much imagination to conceive of many water-based conflict scenarios in the Sudan as China, with a 40 percent stake in the oil development consortium and a large construction labor presence in Khartoum,³³ could become involved in Sudanese Nile River projects. As China fills the shortfall in aid created as Europeans withhold aid due to human rights offenses,³⁴ it is possible that the Sudanese could seek Chinese water project involvement, just as the Egyptians realigned with the Soviets over water projects. The south of Sudan is considered one of the world's greatest potential breadbaskets. Even prior to the fighting in the Darfur, Hassan II of Morocco was warning that "the Sudan could well be the next field of battle for it is potentially the richest country in Africa. Soon 70 million hectares will be cultivated there. They have...oil. Strategically it controls the sources of the Nile."³⁵ In order to tap into that vast agricultural potential, the Sudd swamps in southern Sudan, formed by the plateau that impedes the White Nile, "would have to be drained, a rural infrastructure put in place, and the nomadic cattle raisers of the region somehow turned into sedentary farmers."³⁶ However, it must be considered that an attempt to build the Jonglei Canal in the early 1980s to improve the flow of the White Nile resulted in armed intervention by the semi-autonomous peoples of southern Sudan.³⁷ They feared the loss of their traditional livelihoods as cattle herdsman.³⁸ Additionally, there had been long-standing fears that if the swamps were drained, "Egyptian

³¹ Waterbury, *Hydropolitics of the Nile Valley*, 199.

³² "Sudan: It'll do what it can get away with" *The Economist*, 3 December 2005, 25.

³³ Ibid.

³⁴ "China and Africa: No questions asked" *The Economist*, 21 January 2006, 44.

³⁵ Hassan II quoted in Waterbury, *Hydropolitics of the Nile Valley*, 78-79.

³⁶ W. David Hopper quoted Waterbury, *Hydropolitics of the Nile Valley*, 174.

³⁷ Allan, 154.

³⁸ Ibid.

peasants would pour in to the area to cultivate the new lands.”³⁹ A problem that did not exist at the time of the Jonglei canal conflicts, but now applies is that the Sudd swamp is the second largest wetland in Africa. Accordingly, the environmental concern of draining the wetland now has international attention as a ‘green’ issue.⁴⁰

Like the Sudan, Ethiopia has received promises of Chinese aid to make up for European reductions.⁴¹ Currently, Ethiopia is the tenth largest recipient of U.S. aid⁴² and serves a strategic role in the fight on terrorists who seek safe haven in the region.⁴³ More so than the Sudan, Ethiopia represents the greatest possibility of an Egyptian military intervention to force water access in response to diversion of the Blue Nile. However, such an attempt would probably require Sudanese cooperation and facilities access.⁴⁴ This possibility would pit three of the top recipients of U.S. aid as belligerents, a circumstance that is not desired. Whether Egypt would or would not take military action, it is a near certainty that at some point, Ethiopia will expand its level of irrigation and that will have negative effects on Egypt.⁴⁵ This is especially evident following the affects of low Ethiopian rainfall in 1988 where Egypt was required to reduce its irrigated acreage by 25 percent.⁴⁶ As the source of over “82 percent of the Nile’s water”⁴⁷, Ethiopia has the ability to affect flows with hydroelectric power projects like storage facilities, and could by forming an agreement to

³⁹ Waterbury, *Hydropolitics of the Nile Valley*, 76-77.

⁴⁰ Allan, 66.

⁴¹ “China and Africa: No questions asked,” 44.

⁴² Tarnoff and Nowels, 13.

⁴³ “Eritrea and Ethiopia: Backing the favourite” *The Economist*, 29 October 2005, 47.

⁴⁴ John Waterbury, “Transboundary Water and the Challenge of International Cooperation in the Middle East,” in *Water in the Arab World: perspectives and prognoses*, ed. Peter Rogers and Peter Lydon (Cambridge, MA: Harvard University Press, 1994), 45-46.

⁴⁵ Waterbury, “Transboundary Water and the Challenge of International Cooperation in the Middle East,” 52.

⁴⁶ Allan, 67.

⁴⁷ Starr and Stoll, 15.

provide power to the Sudan,⁴⁸ negate the coercive potential of an Egypt and Sudan water alliance. Attempts by Egypt to form a Nile cooperative body have been rebuffed by Ethiopia and well as other upstream riparians like Kenya and Burundi.⁴⁹ Instead, “the Ethiopian delegation to the UN Water Conference stressed the sovereign right of any riparian state, in the absence of an international agreement, to proceed unilaterally with the development of water resources within its territory.”⁵⁰

The Euphrates

Like the Nile, the Euphrates flows through riparian countries that are considered among the worlds most severely water stressed. The river “originates in the mountains of Eastern Turkey” and discharges in the Persian Gulf, passing through Syria and then Iraq⁵¹ – where it forms the formerly fertile Mesopotamia region with the Tigris. Syria is the world’s third worst water stressed, with 99.6 percent of the country consuming more than “40 percent of available water.”⁵² Iraq ranks nineteenth worst at 86 percent and Turkey is twenty-eighth worst at 64 percent.⁵³ Further increases in water scarcity are to be expected in the region’s future as Turkey; already the world’s twelfth most populous country with over 71 million inhabitants is predicted to increase by 75 percent to 126 million by the year 2050. Likewise, Iraq’s population is expected to grow 153 percent by 2050 from 25.2 million to 64 million people.⁵⁴ Turkey’s Ministry of Foreign Affairs declares that “current water resources in the

⁴⁸ Waterbury. “Transboundary Water and the Challenge of International Cooperation in the Middle East,” 52.

⁴⁹ Allan, 258.

⁵⁰ Waterbury, Hydropolitics of the Nile Valley, 238.

⁵¹ Starr and Stoll, 8.

⁵² The Economist Pocket World in Figures, 105.

⁵³ Ibid.

⁵⁴ Ibid, 16.

Middle East have become insufficient to meet the needs.”⁵⁵ The Ministry freely predicts further that “water is likely to become the cause of conflict among the countries in the region” due to future scarcity increases resulting from population growth and increased consumption.⁵⁶

Unequal resource access has served as a source of tension among the Euphrates riparians. The Soviet sponsored development of Syria’s Tabqa High Dam in the early 1970s,⁵⁷ resulted in Iraqi claims that 3 million downstream farmers were adversely affected.⁵⁸ In addition to Iraqi threats to bomb the dam, both sides moved troops to the border. Only Soviet and Saudi mediation, resulting in Syria increasing the volume of water released from the dam, prevented a water war.⁵⁹ Iraq again threatened to bomb dams when Turkey filled the reservoir at the Ataturk Dam in January 1990, shutting off the flow of the Euphrates to Syria and Iraq for a month.⁶⁰ All three riparians on the Euphrates have “tended to develop its water use plans unilaterally, without regard to the needs of the other riparians, the environment, or the actual capacity of the basin.”⁶¹ For its part, Turkey has developed a plan of “22 dams and 19 hydroelectric power stations to be built on the Euphrates-Tigris over an area as big as Belgium.”⁶² Former Prime Minister Demirel, a former engineer whose efforts drove the Turkish damming of the Euphrates, replied to Iraqi and Syrian concerns that “this is a matter of sovereignty. We have every right to anything we want...Water resources are Turkey’s, and oil is theirs. Since we don’t tell them ‘Look, we have a right to half of your

⁵⁵ Republic of Turkey, “Water Issues Between Turkey, Syria, and Iraq,” (16 September 2005) <<http://www.mfa.gov.tr/MFA/ForeignPolicy/MainIssues/WaterIssues/WaterIssuesBetweenTurkeySyriaIraq.htm>> [12 April 2006]

⁵⁶ “Water Issues Between Turkey, Syria, and Iraq.”

⁵⁷ Allan, 72.

⁵⁸ Starr and Stoll, 10.

⁵⁹ Allan, 73.

⁶⁰ Ibid.

⁶¹ Allan, 72.

⁶² Ibid.

oil,' they cannot lay claim to what's ours....These cross border rivers are ours to the very point they cross the border."⁶³ Some experts have claimed "that Syria used its protection of Kurdish dissidents from Turkey as a lever to gain attention from the Ankara government for Syrian water interests. Syria was signaling that Turkey's self-interest assertion over water, a shared economically strategic resource, could have serious political and security costs in another area."⁶⁴ This direct support of "Turkey's most serious internal security problem"⁶⁵ over water access has a destabilizing effect on the Middle East. The destruction of Iraq's ability to project power, beginning in the 1991 Gulf War and later in the overthrow of the Hussain government has provided Turkey with "greater-than-ever dominance in the basin,"⁶⁶ especially in light of their fielding the world's ninth largest standing military force of over a half million men in its armed forces.⁶⁷ The Kurdish population in Turkey is settled at the headwaters of the Euphrates and would pose yet another potential player in the Euphrates water access disputes if they were ever able form a Kurdistan state.⁶⁸ Already in Iraq, "the Kurds have been pressing hard to gain more control of natural resources in their region. Their prime minister, Nechirvan Barzani, declared: 'the time has come that, instead of suffering, the people of Kurdistan will benefit from the fortunes and resources of their country.'"⁶⁹ In recent testimony, Kenneth Pollack told the Congress that due to Iraqi frustrations with basic services, specifically including "clean water" that "it seems...likely

⁶³ Waterbury. "Transboundary Water and the Challenge of International Cooperation in the Middle East," 57.

⁶⁴ Allan, 233.

⁶⁵ Waterbury, "Transboundary Water and the Challenge of International Cooperation in the Middle East," 55.

⁶⁶ Naff, 281.

⁶⁷ The Economist Pocket World in Figures,101.

⁶⁸ Elhance, 139.

⁶⁹"Iraqi Kurdistan: Taking the oil" The Economist, 17 December 2005, 44.

that the current trend will produce a slide toward fragmentation and civil war.”⁷⁰ That threat of fragmentation must force consideration that once the Euphrates enters Iraq, it traces its path past Ramadi and near Falluja as it runs through the Anbar province, the Sunni region that “is Iraq’s most violent province.”⁷¹ A more aggravated water situation would be difficult to imagine than a future scenario where the Euphrates has headwaters in Kurdistan, passes through Syria, and then enters an independent Anbar state, before passing thru Shia occupied lands. Water scarcity, due to the combination of access disputes and certain population growth would translate into violent and further destabilizing social effects both between and within states.

Jordan River

“If we solve every other problem in the Middle East but do not satisfactorily resolve the water problem, our region will explode. Peace will not be possible.”
- Yitzhak Rabin⁷²

The Jordan River is the significant source of water whose riparians; Syria, Jordan, and Israel all rank among the worst water stressed countries. Israel is the Earth’s fourth worst severely water stressed country, with 98 percent of the country consuming over “40 percent of the available water.”⁷³ Jordan ranks 23rd worst at 81 percent.⁷⁴ Currently, Israel’s demand exceeds its supply by ten percent. Further, its projected population growth, not including immigration, “will probably cause the country’s water demand to outstrip supply

⁷⁰ Kenneth M. Pollack, “Testimony,” U.S. Congress, Senate, Senate Foreign Relations Committee, Iraq’s Security, 109th Cong, 1st sess., 18 July 2005, <<http://www.senate.gov/~foreign/testimony/2005/PollackTestimony050718.pdf>> [12 April 2006], 11.

⁷¹ “Iraq: The wild west.” The Economist, 8 April 2006, 48.

⁷² Yitzhak Rabin, quoted in Paul Simon, Tapped Out: the coming world crisis in water and what we can do about it, 47.

⁷³ The Economist Pocket World in Figures, 105.

⁷⁴ Ibid, 105.

by at least forty percent.”⁷⁵ Across the entire Jordan Basin, a river that can realistically support 12 million people, and up to 14 million under ideal conditions, will be home of between 16 to 18 million people by the year 2020.⁷⁶ The river basin has seen both conflicts caused by water access and those with water as an underlying factor. All three riparians were belligerents in 1951 and 1952 over “water flow, drainage, and diversion” of the Jordan and its tributary the Yarmuk River.⁷⁷ Following Syria’s shelling of an Israeli water facility being developed; there was an attempt by President Eisenhower’s administration to broker a formal agreement on Jordan River water use.⁷⁸ The resulting Johnston plan was formally rejected by the riparians, yet informally adhered to from 1955 until the 1967 Six Day War.⁷⁹ Israel responded with attacks when Syria attempted to divert the river’s headwaters in 1964, forcing the Syrians to abandon the effort.⁸⁰ The following two years saw cross-border attacks against water diversion projects,⁸¹ with full-scale war in 1965 being averted by U.S. warnings to Israel.⁸² Further animosities were inflamed as Israel constructed the National Water Carrier which transported water out of the river basin.⁸³ Though not the trigger for the 1967 Six Day War, water was a factor in its outbreak.⁸⁴ Israel included in its targeting the Muchaiba Dam and Jordan’s East Ghor Canal, using air strikes to destroy the former and damage the latter.⁸⁵ The war resulted in Israel controlling the upper Jordan by occupying the Golan Heights and most significantly “the outcome of the war....[has] determine[d] the hydropolitics” in the

⁷⁵ Homer-Dixon.

⁷⁶ Elhance, 93.

⁷⁷ Schwartz and Singh, 12.

⁷⁸ Elhance, 112.

⁷⁹ Naff, 276.

⁸⁰ Waterbury, “Transboundary Water and the Challenge of International Cooperation in the Middle East,” 45.

⁸¹ Schwartz and Singh, 12.

⁸² Elhance, 115.

⁸³ Naff, 277.

⁸⁴ Ibid.

⁸⁵ Elhance, 108.

river basin for the decades that have followed.⁸⁶ Internal water access disputes and conflicts have also taken place in Israel. For example, The Palestinian Liberation Organization's first attempt at sabotage was the unsuccessful bombing of the National Water Carrier.⁸⁷ Additionally "water....[was] a major rallying cry for the Palestinian Intifada in the Occupied Territories and for conservative parties in Israel."⁸⁸

Recommendations

The conflicts that arise from water scarcity in the Middle East and North Africa are of concern to the EUCOM and CENTCOM commanders because this has proven to be a source of instability in the region. That instability is incubating a violence that is no longer contained in the region, but is now exported as a threat to the United States. Attention to water access in the region has focused at the tactical level. For example, repairing local water facilities, digging wells, or improving sanitation - which are all critical tasks. A review of government statements of strategy limits discussion at these local level actions, but avoids discussion of water access at the strategic or theater levels. Similarly, water has only been recently received mention in either the EUCOM or CENTCOM commander's testimonies to Congress. Recently, General Abizaid included "lack of dependable water sources" in a "daunting list of challenges" that "fuel the volatility of" the Horn of Africa region."⁸⁹ However, he concentrates his planned responses to "meet immediate needs...for potable water and sanitation."⁹⁰ There is no argument that those immediate needs are required to

⁸⁶ Allan, 77.

⁸⁷ Elhance, 102.

⁸⁸ Naff, 282.

⁸⁹ John P. Abizaid, "Statement," U.S. Congress, Senate, Senate Armed Services Committee, 2006 Posture of the United States Central Command, 109th Cong, 2d sess., 14 March 2006.

⁹⁰ Abizaid.

save lives and perhaps mitigate some first order social effects like human migration.

However, the combatant commanders must also accept that there are Operational and Theater level roles in mitigating the effects of water scarcity.

Phase zero operations, designed to shape the theater, will require an interagency response. A standing Joint Interagency Coordination Group for Water (JIACG-Water) should be sponsored by each of the two combatant commanders, with links to each other and including liaisons being traded between the commands. Sponsoring a JIACG-Water would be a positive step to solving the lack of integration of the myriad of U.S. agencies that perform water related functions in the region. That “lack of continuity in communication among responsible agencies” has caused “a reduction in effectiveness of U.S. efforts.”⁹¹ A JIACG-Water could bring together, and provide access to the expertise of the State Department’s Bureaus of Near Eastern Affairs and Intelligence and Research, USAID, Department of Agriculture, and other U.S. agencies working on water issues in the region.⁹²

As a military-diplomat, the combatant commanders are better postured to deal with leaders in the area, carrying a multilateral perspective, rather than the bilateral restraint that affects other organizations, like the state department.⁹³ As General Zinni noted, they have “more personal presence and far more connections than the ambassadors,” especially in countries where “the senior government leadership is also the senior military leadership.”⁹⁴ When fulfilling this shaping role, the combatant commanders must be aware of the potential for water scarcity conflicts and the possible indicators that underlying water-based threats to regional stability, already a concern, are festering.

⁹¹ Starr and Stoll, 18.

⁹² Ibid, 26.

⁹³ Stephen D. Wrage, “U.S. Combatant Commander: the man in the middle,” in America’s Viceroy’s: the military and U.S. foreign policy, ed. Derek S. Reveron (New York: Palgrave Macmillan, 2004), 191.

⁹⁴ Tom Clancy, Tony Zinni and Tony Koltz, Battle Ready (New York: G.P. Putnam’s Sons, 2004), 319.

The example of Israel's occupation of the Golan Heights must be considered during Phase three and four operations. Termination of hostilities must include a solid understanding of how physical demarcations will affect future water access and will be a major determinant of the regional political and security landscape for possibly half a lifetime, or longer.

The example of the difficulty and expense of restoring Iraqi water capability must also be an example in phase three operations. Here, Iraq's water facilities were significantly damaged as part of aerial bombings during the 1991 Gulf War, in flawed 'airpower' sidebar actions taking place while decisive actions against Iraq's ground forces were being conducted hundreds of miles away. Only some of those facilities were rebuilt and the Iraqi people have had to suffer through the water shortages that resulted.⁹⁵ The lack of water due to this infrastructure shortfall has become a significant impediment to solving the Iraqi people's frustrations.⁹⁶ In potential scenarios where the United States may have to employ armed force in the region in the future, for example in Syria or Iran, it may be best to consider that future instability that adversely affects future United States engagement in those countries may not be worth the immediate destruction of the civilian population's access to water.

Combatant commanders cannot wait until hostilities commence to determine these answers. Wargames that play out the results of shifting borders on the future of water scarcity must be developed at centers like the Naval War College's War Gaming Department. Due to the seam that exists across EUCOM and CENTCOM as the rivers studied here cross from one Area of Responsibility into the other, solutions must be synchronized and integrated between the combatant commanders. Syria serves as a prime example. Any U.S. intervention in Syria should be a CENTCOM responsibility by rule. However, to engage in

⁹⁵ Elhance, 131.

⁹⁶ Pollack, 11.

Syria, without planning for future riparian issues concerning both the Euphrates and Jordan Rivers would leave post-conflict plans to chance, rather than design. In both cases, with other riparians in the EUCOM Area of Responsibility, integrating EUCOM in endstate planning would be a necessity to developing a lasting effect. With its unique geographic position as a riparian on two rivers with resource access problems, Syria can continue to frustrate attempts to mitigate water scarcity on both the Euphrates and Jordan Rivers.⁹⁷ If Syria determines, or is compelled by others, to become a respectable regional player, the CENTCOM commander could reasonably be expected to have some role in shaping relations with the country's leadership. Further, the combatant commanders are well placed to shape riparian policy that exists among our allies, who may be on less than friendly terms with one another. Though civilian agencies like the U.S. Agency for International Development, Department of Agriculture, or other State Department agencies could be expected to have the lead in formal U.S. assistance for water matters, the countries of the region are no more likely to agree to formal water sharing agreements than they were 50 years ago when the Eisenhower administration attempted the Johnston Plan. However, just as the Johnston plan was informally implemented, the combatant commanders' informal, yet close and influential relationships that are built in the region could influence similar informal adherence to general principles that prevent water conflicts and the instability that is exported from the region. Again, the need for the combatant commanders to ensure that their military diplomacy is synchronized and integrated on a common message is critical when dealing with countries who share a river, but not a combatant commander. This role for the combatant commanders is especially relevant when faced with a scenario like the U.S. faces where two significant allies, like Turkey and Iraq, have traditional and as yet unresolved water disputes, and one

⁹⁷ Elhance, 110.

country does not have a functioning government, placing it at an awkward disadvantage. “The absence of a government has paralyzed decision-making”⁹⁸ in Iraq, and has no doubt caused a void in water issues that may require attention with its upstream neighbors, Syria and Turkey. Any interstate water agreements made in the region, though perhaps brokered by either the EUCOM or CENTCOM commanders, should not bear the stamp of the United States, but rather be made by a sovereign and permanent local government. What must be avoided is a situation like that concerning Ethiopia’s “rejection...of agreements signed by Italy in Ethiopia’s name,” ensuring that they are bound by no water conventions with their fellow Blue Nile riparians.⁹⁹

Counterargument

The most widely argued point that academics make for resolving Middle East and North Africa water woes is for the inhabitants to simply reduce agriculture and import food. Their rationale is that agriculture commands the majority of water consumption, which is true. They argue that the countries in the region can import agricultural products rather than grow them, a concept referred to as ‘virtual water.’¹⁰⁰ Tony Allan, a leading expert, argues that “in practice more water flows into the Middle East each year in this ‘virtual form’, embedded in cereal imports as is used for annual crop production in Egypt.”¹⁰¹ He goes on to conclude that as a result of these imports, “Egypt is by far the most water rich country in the arid part of the Middle East and North Africa.”¹⁰² These arguments are also based on the assumption, accepted as a truism in the ‘virtual water’ camp, that the nations in the region,

⁹⁸ “Iraq: Near the point of no return” *The Economist*, 22 April 2006, 48.

⁹⁹ John Waterbury, *Hydropolitics of the Nile Valley*, 75.

¹⁰⁰ Allan, 17.

¹⁰¹ Ibid.

¹⁰² Ibid.

“if they cannot access enough water as a consequence of the actions of another riparian...do not resort to ...armed conflict.”¹⁰³ Rather, “water short economies in practice solve the problem through the economic device of importing water intensive commodities such as grain.”¹⁰⁴ As an endstate, “water shortages can be completely ameliorated now, and probably completely ameliorated in the future, by virtual water.”¹⁰⁵

Virtual water has some merits. Saudi Arabia, by halting grain exports and reducing grain production to meet domestic requirements only, made substantial reductions in water usage.¹⁰⁶ However, an oil rich nation like Saudi Arabia can afford far more than the impoverished peoples who inhabit the Nile, Euphrates, and Jordan basins. Importing ‘virtual water’ “require[s] an economy that generates enough exports to cover the cost of large food imports.”¹⁰⁷ The virtual water thesis ignores that the nations of the region are overwhelmingly agricultural based.¹⁰⁸ The simple answer of halting agriculture to ensure that water is reserved for drinking, washing, bathing, and non-agricultural industry ignores the disastrous results that would accompany hundreds of millions of people being no longer employed in the only type of work available in the region. Further, the argument that countries will not resort to war due to water ignores the record of Israel, Syria, the Palestinians, the Sudan, and migration related conflicts that can be traced and attributed to water shortages.

¹⁰³ Ibid, 293.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid, 35.

¹⁰⁶ Ibid, 168.

¹⁰⁷ Naff, 257.

¹⁰⁸ Elhance, 130.

Conclusion

Stability in the Middle East and North Africa is now recognized as important to the security of the United States.¹⁰⁹ The stability of the region is affected by many factors, with water scarcity being either a direct cause of instability, or an underlying condition of another direct cause. This paper has shown that the riparian countries of the Nile, Euphrates, and Jordan rivers are plagued by the sources of water scarcity: decrease in water quantity and quality, population growth, and unequal resource access that lead to negative second and third order social effects.¹¹⁰ Those social effects are all too often likely to end in violence, and pose a threat to the region, and now the world. Additionally, the riparian countries of these river basins have a history of ensuring that their water access is assured, even by means of military action or military threats.¹¹¹ Indeed, “since 1960, the water issue in the Middle East has become increasingly militarized, while at the same time the region’s water problems have grown more acute.”¹¹² Accordingly, there is a place for the combatant commanders with responsibility for this Area of Operations, EUCOM and CENTCOM, to include water issues in their theater and operational activities: both in shaping the areas and when required, in conducting operations. Additionally, with each of these major rivers crossing from one Area of Responsibility to another, the EUCOM and CENTCOM commanders must ensure their actions concerning water in the region are synchronized and coordinated with each other and a common picture of the endstate is both shared and worked toward.

¹⁰⁹ Donald H. Rumsfeld, National Defense Strategy of the United States of America (Washington, DC: March 2005), 1.

¹¹⁰ Homer-Dixon.

¹¹¹ Elhance, p. 231.

¹¹² Naff, 284.

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